

# **INTERNATIONAL CONFERENCE ON RENEWABLE ENERGY AND POWER QUALITY (ICREPQ'05)**

## **WELCOME TO ICREPQ'05**

On behalf of the Steering Committee I want to give you a very warm welcome to ICREPQ'05 and to Zaragoza.

Our International Programme Committee has selected a high quality 105 papers (among 140 proposals) from which 87 will be presented at the Conference, 32 at oral sessions and 55 at poster sessions, along the three days of the ICREPQ'05. All of these are the papers included at the final programme. Also it will be presented seven invited papers (five in English and two in Spanish) along five plenary sessions.

ICREPQ'05 cover the whole range of problems and solutions concerning specially with renewable energies and power quality and all the papers have directly influence about these two fields of research and practical work.

We would like to thank all the authors, session chairmen, participants without papers and the International Program Committee members who have made important contributions by reviewing the proposals.

In addition to the technical sessions, a number of social events have been arranged. On Wednesday evening (16<sup>th</sup> March, 18:15 H) we will be hold a Reception with aperitif and on Thursday (17<sup>th</sup> March, 20:00 H) the Conference Banquet at the "Sella" Restaurant where we will deliver presents to those companies that collaborate with the organization of the ICREPQ'05 Conference.

I hope you will find the conference intellectually stimulating, that you will make many fruitful personal contacts here and that you will thoroughly enjoy your visit to Zaragoza and the surrounding area.

Best regards.  
Sincerely,

Prof. Manuel Pérez-Donsión  
Chairman of the Steering Committee

## **OBJETIVES AND TOPICS.**

The intention of the organisers is to give an opportunity to academics, scientists, engineers, manufacturers and users from all over the world to come together in a pleasant location to discuss recent development in the areas of Renewable Energy and Power Quality.

The International Conference on Renewable Energy and Power Quality (ICREPQ'05) will be structured in:

- **Plenary Sessions:** in one auditorium for all the participants
- **Oral Sessions:** Renewable Energy and Power Quality simultaneously in two rooms
- **Posters Sessions:** In 45-minute periods during the coffee breaks.

### **1. RENEWABLE ENERGY:**

Topics include, but are not limited to:

- Wind Energy, Small Hydro Energy, Solar Energy, Photo-voltaic Energy, Ocean Energy, Geothermal, Biomass,...
- Classical and special electrical generators: Theory, design, analysis, losses, efficiency, heating and cooling, vibration and noise, modelling and simulation, control strategies, protection systems, maintenance, mechanical behaviour, new methods of testing, parallel Operation, stability,...
- Power plants. Distributed generation. Fuel cells. Co-generation. Hybrid Systems. Original solutions,...
- Energy conversion, conservation and energy efficiency. Energy saving policy. Energy storage. Batteries,...
- Energy and the environment. Ecological balance. Ecosystem,...
- Application of the renewable energy. Best practice projects.
- Legislation in the area of renewable energy.
- Biomass combustion techniques. The energy use of agricultural and forest residues. Production and the energy exploitation of bio-gas.
- Interconnection and transport problems.
- Planning and control of the power system take into account the renewable energy.
- Economic analysis of the power system take into account the renewable energy.
- Regulation/deregulation of the power market. Influence of the renewable energy.
- Models and simulation of the power systems. Models and estimation of loads. Software tools.
- Application of the telecommunications, internet, artificial intelligence for the Renewable energy.
- Security assessment and risk analysis in renewable energy.
- Electric vehicles.

## **2. POWER QUALITY:**

Topics include, but are not limited to:

- Power Quality in Distribution.
- Economic Studies of the Power Quality
- Quality of the voltage wave
- Low-frequency conducted disturbances: Voltage deviations, voltage fluctuations (flicker), voltage dips and short interruptions, harmonics transient over-voltages, voltage unbalance (imbalance), temporary power-frequency variations.
- Sources, effects and mitigation methods of electromagnetic disturbances.
- Measurements of the power quality in networks and industrial installations.
- Equipment, procedures and measurement methods. Standards.
- Quality of the voltage wave measurements in the laboratory. Equipment, procedures and measurement methods and text. Laboratories. Standards
- Modelling and simulation of the power quality. Software tools.
- Transmission of the disturbances
- Filtering techniques
- Power factor compensation. Capacitor switching techniques
- Optimisation techniques
- Telecommunication, internet and artificial intelligence applications.
- Permanent monitoring techniques and online diagnosis
- Intelligent energy delivery systems. Uninterrupted power supplies
- Expert systems applications
- Devices, equipment and power systems. Control centres
- Specific problems and studies cases
- Power quality standards
- Power quality influence in deregulated markets

### **INTERNATIONAL PROGRAM COMMITTEE**

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Wilhelmi Ayza, J.R. (Spain)

## **CHAIRMAN OF THE STEERING COMMITTEE**

Donsión, M.P.

## **LOCAL ORGANISING COMMITTEE**

Sanz Badía, M. (Chairman)  
Arcega Solsona, F.J.  
Llombart Estopiñan, A.  
García Gracia, M.  
Artal Sevil, S.  
Sanz Osorio, J.

## **SPONSORSHIP**

Sincere thanks are expressed to the organisations listed below who have given valuable support to ICREPQ'05:

SCHNEIDER Electric Española, S.A.  
ENDESA  
Diputación General de Aragón (DGA)  
TAIM TFG  
IDOM Ingeniería  
VESTAS  
Colegio Oficial de Ingenieros Industriales de Aragón y Rioja  
Universidad de Zaragoza  
Fundación Circe  
AEDIE  
Circuitor

## **COLLABORATORS**

- Escuela Universitaria de Ingeniería Técnica Industrial de Zaragoza
- Colegio Oficial de Ingenieros Técnicos Industriales de Aragón y Rioja

## **SOCIAL EVENTS**

- **Reception and Aperitif:** 16<sup>th</sup> of March at 18:15 H at the Paraninfo.
- **Conference Banquet:** 17<sup>th</sup> of March at 20:00 H at the “Sella” Restaurant.

# GENERAL TECHNICAL PRE-PROGRAMME ICREPQ'05

Wednesday 16 March 2005						
9:00 – 10:00	<b>Registration</b>					
10:00 - 10:45	<b>Openig ceremony ROOM D “DGA”</b>			<b>ROOM C “TAIM TFG”</b>		
10:45 – 11:30	Posters Session at Room C “TAIM TFG” <b>(Session C1)</b> Coffee Break			204	208	212
				214	215	216
				218	219	221
				222	226	227
				233	234	235
				237	238	217
				256		
	<b>ROOM D “DGA” Plenary sessions PL1 and PL2</b>					
11:30 – 13:15	<b>PL1</b>	<b>The Spanish RD&amp;I Policy in the Energy Field</b> Carlos Alejaldre Losilla. Director General for Technology Policy of Spanish Government				
	<b>PL2</b>	<b>Firm Capacity and Dispatchability from Solar Thermal Power Plants</b> Manuel Romero. Head Renewable Energy Division of CIEMAT				
	EXTRA TIME FOR DISCUSSION					
13:15 – 15:15	<b>Lunch</b>					
	<b>ROOM A “SCHNEIDER Electric”</b>		<b>ROOM B “ENDESA”</b>		<b>ROOM C “TAIM TFG”</b>	
	<i>Oral sessions</i>		<i>Oral sessions</i>		<i>Poster sessions</i>	
15:15 – 16:00	<b>A1</b>	<b>B1</b>				
	327   333   210	293   271   284				
	316	309				
	EXTRA TIME FOR DISCUSSION					
16:00 – 16:45	Poster Session at Room C “TAIM TFG” <b>(Session C2)</b> Coffee Break			240	241	243
				244	245	249
				253	254	255
				257	260	262
				265	268	269
				270	272	292
				312		

<b>Wednesday 16 March 2005</b>			
	<b>ROOM A</b> "SCHNEIDER Electric"	<b>ROOM B</b> "ENDESA"	
	<i>Oral sessions</i>	<i>Oral sessions</i>	
16:45 – 17:30	<b>A2</b> 274 311 327 335	<b>B2</b> 334 304 279 264	
EXTRA TIME FOR DISCUSSION			
	<b>ROOM D</b> "DGA" <b>Plenary sessions PL3</b>		
17:30 – 18:15	<b>PL3</b>	<b>Integration of Wind Power Generation into the Spanish Electricity System</b> Juan Francisco Alonso Llorente Network Access Department Manager of "Red Eléctrica de España".	
EXTRA TIME FOR DISCUSSION			
18:15 – 19:30	<b>Reception and Aperitif</b>		

<b>Thursday 17 March 2005</b>			
	<b>ROOM A</b> "SCHNEIDER Electric"	<b>ROOM B</b> "ENDESA"	<b>ROOM C</b> "TAIM TFG"
	<i>Oral sessions</i>	<i>Oral sessions</i>	<i>Poster sessions</i>
9:30 – 10:45	<b>A3</b> 248 299 306 307	<b>B3</b> 228 229 247 250	
EXTRA TIME FOR DISCUSSION			
10:45 – 11:30	Posters Session at Room C "TAIM TFG" <b>(Session C3)</b> Coffee Break		273 319 323 324 326 330 296 275 276 277 280 291 300 301 305 310 314 295
	<b>ROOM D</b> "DGA" <b>Plenary sessions PL4</b>		
11:30 – 12:30	<b>PL4</b>	<b>CO<sub>2</sub> Sequestration: The Spanish Case</b> Antonio Valero-Capilla Head of the CIRCE Foundation	
EXTRA TIME FOR DISCUSSION			

12:30 – 13:15	Coffee Break (Posters XVRGIIE)	
13:15 – 15:15	<b>Lunch</b>	
	<b>ROOM D</b> “DGA” <b>Plenary sessions PE0 (Spanish)</b>	
15:15 – 16:00	<b>PL5</b>	<b>Energy Saving due to Building Automotion. Remote internet monitoring.</b> Joaquím Daura TAC Technical Manager (Schneider Electric)
		EXTRA TIME FOR DISCUSSION
16:00 – 20:00	FREE TIME	
20:00 -22:30	Conference Banquet at “Sella” Restaurant	

<b>Friday 18 March 2005</b>			
9:30-11:15	<b>ROOM D</b> “DGA”		
	PLENARY SESSION PE (Spanish)		
	<b>PE1</b>	<b>Sistemas Innovadores de Mejora de la Calidad de Red</b> Faustino Guillen-Minguito Director de Ingeniería Industrial IDOM	
	<b>PE2</b>	<b>ENDESA y la Innovación Tecnológica</b> Santiago Sabugal Director de I+D de ENDESA	
	EXTRA TIME FOR DISCUSSION		
11:15 – 12:00	Coffee Break (Posters XVRGIIE)		
	<b>ROOM A</b> “SCHNEIDER Electric”	<b>ROOM B</b> “ENDESA”	<b>ROOM C</b> “TAIM TFG”
	<i>Oral sessions</i>	<i>Oral sessions</i>	<i>Poster sessions</i>
12:00 – 12:45	<b>A4</b>	<b>B4</b>	
	252    278    315 320	205    337    223 225	
	EXTRA TIME FOR DISCUSSION		
12:45 – 13:15	<b>ROOM D “DGA”</b> <b>Conclusions and time for the next conference (ICREPQ’06)</b>		
13:15 – 15:15	<b>Lunch</b>		

## Wednesday 16 March 2005

**9:00 – 10:00 Registration** (Conference Desk)

**10:00 – 10:45 OPENING CEREMONY** (ROOM D “DGA”)

**10:45 – 11:30 POSTER SESSION C1**

### **ROOM C “TAIM TFG”**

**Chairmen:** Herve Ruisse and V.A. Anunciada

- Household Energy Consumption at an Open Market.**  
204 D..M. Larruskain Eskobal, O. Abarrategui Ranero, E. Loroño Apraiz, M.D. Gutiérrez Ochoa de Alda, F. De la Bodega Bilbao.  
University of the Basque Country. Spain.
- Reduction of Flicker Effect in Power Plants with Doubly Fed Machines.**  
208 J. Bendl, M. Chomat and L. Schreier.
- Experimental Behaviour of a Magnetic Field Shield for an Underground Power Line.**  
212 J. R. Riba Ruiz, X. Alabern Morera.  
Department d'Enginyeria Eléctrica, UPC, Spain
- A New Configuration for Uninterrupted Power in Isolated Locations: Wind Turbine – Electric Generator – Battery Bank (WT-UPS).**  
214 H. Fernández, A. Martínez, V. Guzmán, M. Giménez  
Universidad Nacional Experimental “Antonio José de Sucre”, Universidad de Zaragoza, Universidad Simón Bolívar, Venezuela.
- Two Applications for Power Quality Analysis using the Matlab Wavelet Toolbox.**  
215 M.J. González-Redondo, A. Moreno-Muñoz, J.J. González de la Rosa.  
E.P.S. Universidad de Córdoba, Spain
- Coupled Feedforward and Feedback Control Strategy of Parallel Hybrid Filter for Harmonic Mitigation.**  
216 J. Skamlik, V. Valouch.  
Institute of Electrical Engineering, Prague, Czech Republic.
- Generation and Storage of Green Hydrogen and its Application for PEM Fuel Cells.**  
218 J.J. San Martín Díaz, E. Romero García, J. Zuazua Ojanguren, D. Romero García, V. Aperribay Maiztegui, J.I. San Martín Díaz, J.M. Arrieta Albizu, I. Martín Amundarain.  
University of the Basque Country, Spain.



- Generation and Store of Aeolian Energy in Form of Hydrogen Using Multipole Aeolian Generators.**  
**219** J.J. San Martín Díaz, D. Romero, E. Romero, J. Zuazua Ojanguren, V. Aperribay Maiztegui, J.I. San Martín Díaz, J.M. Arrieta Albizu, I. Martín Amundarain.  
 University of the Basque Country, Spain.
- Performance Analysis of Fuel Cells by Modelling.**  
**221** I. Zamora, J.I. San Martín Díaz, J. Mazón, S. Díaz, J.J. San Martín Díaz, J.M. Arrieta Albizu, V. Aperribay Maiztegui  
 University of the Basque Country, Spain.
- Biodiesel from Castor Oil: A Promising Fuel for Cold Weather.**  
**222** C.L. Barajas Forero  
 Francisco de Paula Santander University, Cucuta, Colombia
- Practical Design of a Load Compensation Active Conditioner.**  
**226** J. Prieto, P. Salmerón, R.S. Herrera  
 E.P.S. La Rábida, Huelva University, Spain.
- Remote Control System for Transformer with on-Load Tap Changer.**  
**227** K.J. Sagastabeitia, Z. Aginako, A.J. Mazón, I. Zamora.  
 University of the Basque Country, Spain.
- Evaluation of the Energy Consumption in Mediterranean Islands Hotels: Case Study: The Balearic Islands Hotels.**  
**233** A. Moia-Pol, M. Karagiorcas, D.Coll-Mayor, V.Martínez-Moll, C. Riba-Romeva.  
 University of Balearic Islands, Spain.
- Components of a Political Energetic Sustentable: Trade of Rights of Emission of Greenhouse Gases (Board 2003/87/CE), International Mechanisms Based on Projects and Funds of Carbon.**  
**234** C. Redondo Gil, A.M. Alonso, L.A. Esquibel, P.Zapico.  
 University of León, Spain.
- Dynamic Model for Energy Predicting in WECS.**  
**235** D. Silió Salcines, J. Largo Cabrerizo, C. Renedo Estebáñez, S. Pérez Remesal  
 University of Cantabria, Spain.
- Proposal to PV Systems Study.**  
**237** J. de la Hoz I Casas, O. Boix Aragonés  
 Polytechnic University of Catalonia, Spain
- Educational Software on Solar Energy Development.**  
**238** J. de la Hoz, S. Nieto, A. de Blas, O. Boix  
 Polytechnic University of Catalonia, Spain
- An Adaptative Control for Wind Turbine.**  
**217** A. Martínez, F. Lescher, J. Yun Zhao.  
 ERPA, EIGSI La Rochelle, France.

- Increasing the Permissive Opening Time of Circuit Breaker by Using UPFC.**  
256 E. Gholipour, H. Masaeli, S. Saadate  
Isfahan High Education and Research Institute (IHRI), Iran  
Groupe de Recherche en Electrotechnique et Electronique de Nancy, France.

**11:30 – 13:15 PLENARY SESSIONS PL1 and PL2**

**ROOM D “DGA”**

**Chairman:** Antonio Valero

- The Spanish RD&I Policy in the Energy Field**  
PL1 Carlos Alejaldre Losilla  
Director General for Technology Policy of Spanish Government
- Firm Capacity and Dispatchability from Solar Thermal Power Plants**  
PL2 Manuel Romero  
Head Renewable Energy Division of CIEMAT

**13:15 – 15:15 Lunch**

**15:15 – 16:00 ORAL SESSION A1**

**ROOM A “SCHNEIDER Electric”**

**Chairman:** Mario Mañana-Canteli

- Study of the Short-Circuit Behaviour of Wind Farms.**  
327 M.P. Comech, I. Franco, S. Martín, S. Borroy, M. García-Gracia.  
University of Zaragoza, Spain.
- Assessment of wind-Power Quality: Implementation of IEC61400-21 Procedures.**  
333 A. Morales, X. Robe, J.C. Maun.  
Université Libre de Bruxelles. Belgium.
- Connection of Shunt Active Power Filters in Multibus Industrial Power Systems for Harmonic Voltage Mitigation.**  
210 J. Tlustý, V. Valouch.  
Faculty of Electrical Engineering. Institute of Electrical Engineering, Prague, Czech Republic.
- A New Hybrid Active Power Filter Topology Enabling Low Voltage Switching Devices and Storage Capacitors.**  
316 H.S. Marques, V.A. Anunciada.  
Instituto Superior Técnico, Lisboa, Portugal

## **15:15 – 16:00 ORAL SESSION B2**

### **ROOM B “ENDESA”**

**Chairman:** Ozdemir Göl

- 293 Investigation on Brushless DC Appropriateness to Direct-Drive Generator Wind Turbine.**  
D. Vizireanu, S. Brisset, P. Brochet, Y. Miler, D. Laloy.  
L2EP – Ecole Centrale de Lille, France
- 271 The Application of Short-Term Deterministic Wave Prediction to Offshore Electricity Generation.**  
J.R. Halliday, D.G. Dorrel, A.R. Wood.  
University of Glasgow, UK. University of Canterbury, Christchurch, New Zeland.
- 284 Energy Management System for Offshore Wind Farms.**  
Ch. Eping, J. Stenzel.  
Institute of Electrical Power Systems, TU-Darmstadt, Germany.
- 309 Wind Turbine Operation in Power Systems and Grid Connection Requirements.**  
A. Sudrià, M. Chindris, A. Sumper, G. Gross, F. Ferrer.  
Politechnical University of Catalonia. Spain. Technical University of Cluj-Napoca, Romania.

## **16:00 – 16:45 POSTER SESSION C2**

### **ROOM C “TAIM TFG”**

**Chairman:** Patricio Salmeron-Revuelta and Coldobo Sagastabeitia-Buruaga

- 240 Improved Injection Current Controller in Single-Phase Shunt Active Power Filters.**  
V.M. Moreno, A. Pigazo  
E.T.S.N., University of Cantabria, Spain.
- 241 Diagnostic Methodology for the Energy Efficiency Estimation in Small Metal Casting Industries.**  
S. Gómez Moreno, Y. Uliyanov López, C.E. Roncancio Uribe.  
Universidad Autónoma de Occidente, Cali, Colombia.
- 243 Dynamic Modelling of Micro-Turbine Generation Systems Using Matlab/Simulink.**  
S.E. Abdollahi, A. Vahedi.  
Iran University of science and Technology, Narmak, Tehran, Iran.

- 244 Performance Analysis of Direct Power Controlled PWM Rectifier under Disturbed AC Line Voltage.**  
H. Azizi, A. Vahedi.  
University of Science & Technology, Iran
- 245 Comparison of Power Filter Topologies for Reducing the Customer-Generated Disturbances Caused by Non-Linear Loads.**  
M.I. Milanés, E. Romero, F. Barrero.  
University of Extremadura, Spain.
- 249 A Hybrid Approach to Compensate Non-linear Loads in Electrical Power Systems.**  
J.R. Vázquez, J.L. Flores, P. Salmerón, S.P. Litrán.  
EPS, University of Huelva, Spain
- 253 Potential Production of Electrical Energy from Forest Biomass in the North of Spain: Cantabria.**  
S. Pérez, C.J. Renedo, D. Silió, A. Ortiz, M. Mañana.  
University of Cantabria, Spain.
- 254 Cogeneration in a Hospital: A Case Study.**  
C.J. Renedo, A. Ortiz, D. Silió, M. Mañana, S. Pérez, J. Carcedo  
University of Cantabria, Spain.
- 255 Distortion and Unbalance Assessing Indices Using Commercial Analysers.**  
P. Salmerón, R.S.Herrera, A. Pérez, J. Prieto.  
E.P.S., University of Huelva. Spain.
- 257 Compensation of Voltage Unbalance and Current Harmonics with a Series Active Power Filter.**  
S.P. Litrán, P. Salmerón, J.R. Vázquez, J.L. Flores.  
E.P.S., University of Huelva. Spain.
- 260 A New Tool for Large Scale Power System Transient Security Assessment.**  
M. Boudour, A. Hellal.  
University of Science & Technology, Algiers, Algeria.
- 262 Physical Model of Disk Type Multipolar Switchboard Generator.**  
A. Chuchalin, I. Safyannikov, I. Rossamakhin.  
Tomsk Polytechnic University, Russia.
- 265 Active and Reactive Power Metering in Non-Sinusoidal Conditions Using Newton Type Algorithm.**  
V. Terzija, V. Stanojevic, Z. Lazarevic, M. Popov.  
ABB Calor Emag Mittelspannung GmbH, Faculty of Electrical Engineering,  
Delft University of Technology, The Netherlands.

- Optimal Location of Small Generators in Weak Networks with Optimal Operation.**  
**268** J.A. Dominguez, J.M. Yusta, A.A. Bayod, J.L. Bernal, M.J. Velilla, J. Mur, M.A. García, A. Díaz.  
 University of Zaragoza, Spain. UNEXPO University, Venezuela.
- Comparison Between Fuzy Logic and PI Controls in a Speed Scalar Control of an Induction Machine.**  
**269** J. Martínez García, J.A. Domínguez  
 University of Zaragoza, Spain.
- Simulation of a Hybrid System Wind Turbine-Battery-Ultracapacitor.**  
**270** H. Bludszweit, J.M. Fandos, J.A. Domínguez, A. Llombart, J. Sanz.  
 Universite of Zaragoza, Spain.
- Study of Measurement Errors in a Current Sensor with Air-Gaps.**  
**272** A. Usón, J. Letosa, F.J. Arcega, M. Samplón, J.S. Artal.  
 University of Zaragoza. Spain.
- Multilevel Convertors for Distributed Power Generation Systems with DC Voltage Sources.**  
**292** A. Jan Iwaszkiewicz, B. Jacek Perz.  
 The Electrotechnical Institute, Gdanks Branch, Poland.
- Hybrid Power Quality Harmonic Indices.**  
**312** R.A. Lima, C.A. Reinieri, F.H. Magnago.  
 Engineering Faculty, Nacional University of Rio Cuarto, Argentina.

**16:45 – 17:30 ORAL SESSION A2**

**ROOM A “SCHNEIDER Electric”**

**Chairman:** Jiri Bendl

- Influence of External Currents in Sensors Based on PCB Rogowski Coils.**  
**274** J.A. Artero, F.J. Arcega.  
 University of Zaragoza, Spain.
- Electric Fault Location Methods Implemented on an Electric Distribution Network.**  
**311** M. Vinyoles, J. Meléndez, S. Herraiz, J. Sánchez, M. Castro.  
 University of Girona, Endesa Distribución, Spain.
- Study of the Short-Circuit Behaviour of Wind Farms.**  
**327** M.P. Comech, I. Franco, S. Martín, S. Borroy, M. García-Gracia.  
 University of Zaragoza, Spain.

- Secondary Load-Frequency Control for Micro Grids in Islanded Operation.**  
335 A. Madureira, C. Moreira, J. Peças Lopes.  
Faculty of Engineering of the University of Porto, INESC, Porto, Portugal.

**16:45 – 17:30 ORAL SESSION B2**

**ROOM B “ENDESA”**

**Chairman:** Shahrokh Saadate

- Synchronizing Renewable Energy Sources in Distributed Generation Systems.**  
334 C. Ramos, A. Martins, A. Cavalho.  
Faculty of Engineering of the University of Porto, Porto, Portugal.
- Power Curve Characterization I: Improving the Bin Method.**  
304 A. Llombart, S.J. Watson, D. Llombart, J.M. Fandos.  
University of Zaragoza, Spain. Loughborough University, UK.
- Software for the Calculation of Optimization and Technical-Economical Viability for Pumping Stations with the Integration of Renewable Energies.**  
279 E. Sainz, J.F. Sanz, M. Sanz, M. Navarro.  
University of Zaragoza, Spain.
- Power Reliability Measurement Through a Very Low Cost Strategy.**  
264 J. Delgado, A. Traça de Almeida.  
Escola Superior de Tecnologia de Viseu, University of Coimbra, Portugal.

**17:30 – 18:15 PLENARY SESSION PL3**

**ROOM D “DGA”**

**Chairman:** Francisco Arcega Solsona

**Integration of Wind Power Generation into the Spanish Electricity System**  
Juan Francisco Alonso Llorente  
Network Access Department Manager of “Red Eléctrica de España”.

**18:15 – 19:30 Reception and Aperitif**

**Thursday 17 March 2005**

**9:30 – 10:45 ORAL SESSIONS A3**

**ROOM A “SCHNEIDER Electric”**

**Chairman:** Erwin Schlemmer

- 248 Voltage Quality Factor for Networks Supplying Unbalanced Nonlinear Loads.**  
J.C. Montaña, D. Borrás, M. Castilla, A. López, J. Gutiérrez, J.C. Bravo.  
Spanish Research Council (CSIC), University of Sevilla, Spain.
- 299 Graphical Environment to Study Reliability of Electric Power Distribution Systems.**  
J.L. Bernal, R. Dufo, H. Ortiz, J.M. Yusta, J. Contreras, J.A. Dominguez, C. Monteiro, F. Mendoza.  
University of Zaragoza. Spain.
- 306 Active and Reactive Power Management of Grid Connected Variable Speed Permanent Magnet Generator Wind Turbine.**  
A.E. Haniotis, J.A. Katsigiannis, P.S. Georgilakis, A.G. Kladas.  
National Technical University of Athens, Technical University of Crete, Greece.
- 307 Power Peak Sources for Isolated Network.**  
V. Brslica.  
University of Defence, Brno, Czech Republic.

**9:30 – 10:45 ORAL SESSIONS B3**

**ROOM B “ENDESA”**

**Chairman:** Johan Bacher

- 228 Impact of Wind Energy Integration in a Distribution Electric Network.**  
V. Rogez, H. Roisse, V. Autier, X. Guillaud.  
LSEE, FSA, Technoparc Futura, L2EP, ENSAM, Ecole Centrale de Lille, France
- 229 Real Time Stochastic Simulator of the Electric Power Produced by a Photovoltaic Power System.**  
V. Autier, V. Molcrette, H. Roisse, J-L. Kotny.  
L.S.E.E., Faculté des Sciences Appliquées, Béthune, France.

- 247 Variable Speed Wind Energy System Based on a Synchronous Generator with a Three Level Inverter.**  
S. Arnaltes, J.L. Rodríguez-Amenedo, M.C. Pérez.  
Universidad Carlos III de Madrid, Spain

- 250 Fuel Cells for Power Generation and Organic Waste Treatment on the Island of Mull.**  
M. Duerr, S. Gair, A. Cruden, J. McDonald, T. Hegarty, M. Chesshire.  
Institute for Energy & Environment, University of Strathclyde, Mull and Iona  
Community Trust, Greenfinch Ltd, UK.

### **10:45 – 11:30 POSTER SESSION C3**

#### **ROOM C “TAIM TFG”**

**Chairman:** S. Brisset and Blas Hermoso Alameda

- 273 Evaluation of Errors Associated with Crosstalk Magnetic Field using Finite Element Method in High Electrical Current Measurement**  
M. Samplón, J.S. Artal, J.Letosa, A. Usón, F.J. Arcega  
University of Zaragoza. Spain.

- 319 A Study for Optimizing a Stand-Alone Hybrid Photovoltaic-Diesel System to Feed Summer Load.**  
G. Delvecchio, M. Guerra, C. Lofrumento, F. Neri.  
Polytechnic of Bari, University of Bari, ENEA-Experimental Area Monte  
Aquilone, Italy.

- 323 Joint Use of Circuit Models and Complexor Diagrams in Generator Design.**  
Ö. Göl, B. Sobhi-Najafabadí.  
University of South Australia, Adelaide, Australia.

- 324 And SQP-Based Optimisation Algorithm for the Derivative Design of Generator.**  
B. Sobhi-Najafabadí, Ö. Göl,  
University of South Australia, Adelaide, Australia

- 326 Effect of Neglecting Stator Transients in Squirrel Cage Wind Generator Model.**  
S. Martín, M.P. Comech, S. Borroy, M. García-Gracia.  
University of Zaragoza, Spain.

- 330 Combined Fourier and Zero Crossing Technique for Frequency Measurement in Power Networks in the Presence of Harmonics.**  
Milenio B. Duric, Zeljko R. Durisic.  
Faculty of Electrical Engineering, University of Belgrade, Serbia y Montenegro.



- A New Tool for the Optimal Design of Electrical Cables in Wind Farms**  
296 A.A. Bayod Rújula, R. Martínez  
University of Zaragoza, Vestas Wind Systems A/S, Spain.
- Review of the Distributed Generation Concept: Attempt of Unification.**  
275 F. González-Longatt, C. Fortoul.  
UNEFA, Maracay. Universidad Central de Venezuela, Caracas. Venezuela.
- Load Following Function of Fuel Cell Plant in Distributed Environment.**  
276 F. González-Longatt, A. Hernandez, F. Guillen, C. Fortoul.  
UNEFA, Maracay. Universidad Central de Venezuela, Caracas. Venezuela.
- Dynamic Performance Implications of the Power Conditioner Grid-Connected for Photovoltaic Source.**  
277 C. Peraza, F. González-Longatt, C. Villanueva.  
Instituto Universitario de Tecnología, Valencia, UNEFA, Maracay. Universidad de Carabobo, Valencia, Venezuela.
- Contactless Excitation System for Synchronous Generators.**  
280 Do-Hyun Kang, Dae-Hyun Koo, Ion Vadab, P. Curiac.  
Korea Electrotechnology Research Institute, Korea. Technical University of Cluj-Napoca, Romania.
- Brushless Doubly-Fed Asynchronous Generator Model for Variable Speed Wind Generation Systems.**  
291 F. Blázquez, C. Beganzones, D. Ramírez.  
E.T.S.I.I., Polytechnic University of Madrid, Spain.
- Cost Loss Allocation in Distribution Networks with High Penetration of Distributed Renewable Generation – A Comparative Study.**  
300 P.M. De Oliveira-De Jesús, M.T. Ponce de Leão, J.M. Yusta-Loyo, H.M. Khodr  
Universidade do Porto, Portugal. University of Zaragoza. Spain. Universidad Simón Bolívar, Venezuela.
- Power Curve Characterization II. Modelling Using Polynomial Regression.**  
301 A. Llombart, S.J. Watson, J.M. Fandos, D. Llombart.  
University of Zaragoza, Spain. Loughborough University, UK.
- A Hybrid Vehicle Configuration with Zero Emission.**  
305 J.M. Andújar Márquez, F. Segura Manzano, M.J. Vasallo Vázquez.  
University of Huelva. Spain
- High Power UPS Selection Methodology and Installation Guideline for High Reliability Power Supply.**  
310 A. Sudrià, E. Jaureguiualzo, A. Sumper, R. Villafáfila, J. Rull.  
Politechnical University of Catalonia. Spain.

- 314 Development of Small-Scale Facilities for Initiating Studies into Sea Wave Energy Generation.**  
D.G. Dorrell, R. Halliday, S. McLean, P. Miller, F. Santamaria Mosquera.  
University of Glasgow, UK.

- 295 Definitions for Distributed Generation: A Revision**  
A.A. Bayod Rújula, J. Mur Amada, J.L. Bernal-Agustín, J.M. Yusta Loyo, J.A. Domínguez Navarro.  
University of Zaragoza, Spain

**11:30 – 12:30 PLENARY SESSION PL4**

**ROOM D “DGA”**

**Chairman:** Andrés Llombart-Estopiñan

- PL4 CO<sub>2</sub> Sequestration: The Spanish Case**  
Antonio Valero-Capilla  
Director of the CIRCE Foundation

12:30 – 13:15 **Coffee Break , ROOM C “TAIM TFG” (Posters XVRGIIIE)**

13:15 – 15:15 **Lunch**

**ROOM D “DGA”**

**15:15 – 16:45 PLENARY SESSION PL5**

**Moderator:** Sinclair Gair

- Energy Saving due to Building Automation. Remote internet monitoring.**  
Joaquím Daura  
TAC Technical Manager (Schneider Electric)

**16:45 – 20:30 FREE TIME**

**20:00 – 22:30 Conference Banquet at “SELLA” Restaurant**

**Friday 18 March 2005**

**9:30 – 11:15 PLENARY SESSION PE (Spanish)**

**ROOM D “DGA”**

**Chairman:** Santiago Arnaltes

**Sistemas Innovadores de Mejora de la Calidad de Red**

**PE1** Faustino Guillen  
Director de Ingeniería Industrial IDOM

**Chairman:** Manuel García Melero

**ENDESA y la Innovación Tecnológica**

**PE2** Santiago Sabugal  
Director de I+D de ENDESA

**11:15 – 12:00 Coffee Break, ROOM C “DGA” (Posters XVRGIIIE)**

**12:00 – 12:45 ORAL SESSION A4**

**ROOM A “SCHNEIDER Electric”**

**Chairman:** Antoni Sudriá

**252 Three-phase Frequency Measurement under Non-sinusoidal Conditions  
Using the Static Reference Frame.**

M. Mañana, A. Ortiz, S. Pérez, C. Renedo, L.I. Eguiluz  
University of Cantabria, Spain.

**278 Voltage Sags in Industrial Systems.**

G. Alonso Orcajo, J.M. Cano, C.H. Rojas, M.G. Melero, M.F. Cabanas, F.  
Pedrayes.  
University of Oviedo, Spain.

**315 Power Quality as a Reliability Problem for Electronic Equipment.**

A. Victor A. Anunciada, H. Ribero.  
Escola Superior de Tecnologia, Universidade Técnica de Lisboa, Portugal.

**320 High Speed Monitoring System for Electrical Equipments.**

M. Brojboiu, V. Ivanov, S. Ivanov.  
Faculty of Electrical Engineering, University of Craiova, Romania.

**12:00 – 12:45 ORAL SESSION B4**

**ROOM B “ENDESA”**

**Chairman:** Viktor Valouch

**205 Transients in a Wind-mill Driven, Two-speed, Squirrel-cage Induction Generator.**

Jan Rusek.

AGH University of Science and Technology, Krakow. Poland.

**337 Power Quality Impact of Wind Farms on Domestic and Industrial Facilities.**

F. Oliveira, A. Madureira, M. Pérez Donsión.

Politechnica Institute of Leiria, INEXC, Portugal. University of Vigo, Spain.

**223 Electric Energy Monthly Demand Forecasting by Spectral Analysis.**

M.A. Jaramillo, E. González, D. Carmona, J.A. Álvarez.

E.I.I., University of Extremadura, Spain.

**225 Neural Network Estimation of Generator Slot Fields for the Calculation of Radial Field Losses and Circulating Currents.**

E. Schlemmer, B. Streibkl, F. Müller.

VA TECH HYDRO GmbH & Co, Weiz, Austria.

**ROOM D “DGA”**

**12:45 – 13:15 Conclusions and time for the next conference (ICREPQ’06)**

**13:15 – 15:15 Lunch**